

ABSTRACTTITLE :

Ultra-short laser source with rare earth ions and stable pulse train and device for
lengthening a laser cavity

APPLICANTS :

AMPLITUDE SYSTEMES

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)

UNIVERSITE DE BORDEAUX 1

INVENTION OF :

Clemens HÖNNINGER

Antoine COURJAUD

Eric MOTTAY

François SALIN

The invention relates to a rare earth ion ultrashort laser source including a resonant cavity (1) having a first output face (2) partially reflecting and a second reflecting face (3). Said source also comprises a first active material (4). Said first material (4) receives a pump luminous flux (6) transmitted via a first solid laser pump source (7).

According to the invention, the resonant cavity (1) exhibits a length of optical path travelled by said pulses greater than 7.5 m so that the pulsed energy E_L is greater than 100 nJ, said optical path including at least one passage in said active material (4) and the ultrashort laser source comprises means for lengthening the resonant cavity (1) thereby enabling to extend the length of the optical path travelled by said luminous pulses in the resonant cavity (1) of a compact laser source, the ABCD propagation matrix of said resonant cavity (1) being close to the unit matrix so that the features of the luminous beam going back and forth in the resonant cavity (1) remain unchanged.

Figure 1